

Herr-Paint Seq. Listing.U.S.ST25.txt  
SEQUENCE LISTING

<110> University of Virginia Patent Foundation  
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Herr, John

<120> Compositions and Methods for Identifying and Isolation Sperm for  
Forensic Applications

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<150> 60/542,499  
<151> 2004-02-06

<150> PCT/US2005/003910  
<151> 2005-02-07

<150> 60/581,945  
<151> 2004-06-22

<160> 6

<170> PatentIn version 3.3

<210> 1  
<211> 285  
<212> PRT  
<213> Homo sapiens

<400> 1

Met Asn Arg Phe Leu Leu Leu Met Ser Leu Tyr Leu Leu Gly Ser Ala  
1 5 10 15

Arg Gly Thr Ser Ser Gln Pro Asn Glu Ser Ser Gly Ser Ile Asp His  
20 25 30

Gln Thr Ser Val Gln Gln Leu Pro Gly Glu Phe Phe Ser Leu Glu Asn  
35 40 45

Pro Ser Asp Ala Glu Ala Leu Tyr Glu Thr Ser Ser Gly Leu Asn Thr  
50 55 60

Leu Ser Glu His Gly Ser Ser Glu His Gly Ser Ser Lys His Thr Val  
65 70 75 80

Ala Glu His Thr Ser Gly Glu His Ala Glu Ser Glu His Ala Ser Gly  
85 90 95

Glu Pro Ala Ala Thr Glu His Ala Glu Gly Glu His Thr Val Gly Glu  
100 105 110

Gln Pro Ser Gly Glu Gln Pro Ser Gly Glu His Leu Ser Gly Glu Gln  
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Pro Leu Ser Glu Leu Glu Ser Gly Glu Gln Pro Ser Asp Glu Gln Pro  
130 135 140  
Ser Gly Glu His Gly Ser Gly Glu Gln Pro Ser Gly Glu Gln Ala Ser  
145 150 155 160  
Gly Glu Gln Pro Ser Gly Glu His Ala Ser Gly Glu His Ala Ser Gly  
165 170 175  
Glu Gln Ser Leu Gly Glu His Ala Leu Ser Glu Lys Pro Ser Gly Glu  
180 185 190  
Gln Ala Ser Gly Ala Pro Ile Ser Ser Thr Ser Thr Gly Thr Ile Leu  
195 200 205  
Asn Cys Tyr Thr Cys Ala Tyr Met Asn Asp Gln Gly Lys Cys Leu Arg  
210 215 220  
Gly Glu Gly Thr Cys Ile Thr Gln Asn Ser Gln Gln Cys Met Leu Lys  
225 230 235 240  
Lys Ile Phe Glu Gly Gly Lys Leu Gln Phe Met Val Gln Gly Cys Glu  
245 250 255  
Asn Met Cys Pro Ser Met Asn Leu Phe Ser His Gly Thr Arg Met Gln  
260 265 270  
Ile Ile Cys Cys Arg Asn Gln Ser Phe Cys Asn Lys Ile  
275 280 285

<210> 2  
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<212> PRT  
<213> Homo sapiens  
<400> 2

Met Ile Ser Ser Lys Pro Arg Leu Val Val Pro Tyr Gly Leu Lys Thr  
1 5 10 15  
Leu Leu Glu Gly Ile Ser Arg Ala Val Leu Lys Thr Asn Pro Ser Asn  
20 25 30  
Ile Asn Gln Phe Ala Ala Ala Tyr Phe Gln Glu Leu Thr Met Tyr Arg  
35 40 45  
Gly Asn Thr Thr Met Asp Ile Lys Asp Leu Val Lys Gln Phe His Gln

50

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55

60

Ile Lys Val Glu Lys Trp Ser Glu Gly Thr Thr Pro Gln Lys Lys Leu  
65 70 75 80

Glu Cys Leu Lys Glu Pro Gly Lys Thr Ser Val Glu Ser Lys Val Pro  
85 90 95

Thr Gln Met Glu Lys Ser Thr Asp Thr Asp Glu Asp Asn Val Thr Arg  
100 105 110

Thr Glu Tyr Ser Asp Lys Thr Thr Gln Phe Pro Ser Val Tyr Ala Val  
115 120 125

Pro Gly Thr Glu Gln Thr Glu Ala Val Gly Gly Leu Ser Ser Lys Pro  
130 135 140

Ala Thr Pro Lys Thr Thr Thr Pro Pro Ser Ser Pro Pro Pro Thr Ala  
145 150 155 160

Val Ser Pro Glu Phe Ala Tyr Val Pro Ala Asp Pro Ala Gln Leu Ala  
165 170 175

Ala Gln Met Leu Gly Lys Val Ser Ser Ile His Ser Asp Gln Ser Asp  
180 185 190

Val Leu Met Val Asp Val Ala Thr Ser Met Pro Val Val Ile Lys Glu  
195 200 205

Val Pro Ser Ser Glu Ala Ala Glu Asp Val Met Val Ala Ala Pro Leu  
210 215 220

Val Cys Ser Gly Lys Val Leu Glu Val Gln Val Val Asn Gln Thr Ser  
225 230 235 240

Val His Val Asp Leu Gly Ser Gln Pro Lys Glu Asn Glu Ala Glu Pro  
245 250 255

Ser Thr Ala Ser Ser Val Pro Leu Gln Asp Glu Gln Glu Pro Pro Ala  
260 265 270

Tyr Asp Gln Ala Pro Glu Val Thr Leu Gln Ala Asp Ile Glu Val Met  
275 280 285

Ser Thr Val His Ile Ser Ser Val Tyr Asn Asp Val Pro Val Thr Glu  
290 295 300

Herr-Paint Seq. Listing.U.S.ST25.txt

Gly val val Tyr Ile Glu Gln Leu Pro Glu Gln Ile Val Ile Pro Phe  
305 310 315 320

Thr Asp Gln Val Ala Cys Leu Lys Glu Asn Glu Gln Ser Lys Glu Asn  
325 330 335

Glu Gln Ser Pro Arg Val Ser Pro Lys Ser Val Val Glu Lys Thr Thr  
340 345 350

Ser Gly Met Ser Lys Lys Ser Val Glu Ser Val Lys Leu Ala Gln Leu  
355 360 365

Glu Glu Asn Ala Lys Tyr Ser Ser Val Tyr Met Glu Ala Glu Ala Thr  
370 375 380

Ala Leu Leu Ser Asp Thr Ser Leu Lys Gly Gln Pro Glu Val Pro Ala  
385 390 395 400

Gln Leu Leu Asp Ala Glu Gly Ala Ile Lys Ile Gly Ser Glu Lys Ser  
405 410 415

Leu His Leu Glu Val Glu Val Thr Ser Ile Val Ser Asp Asn Thr Gly  
420 425 430

Gln Glu Glu Ser Gly Glu Asn Ser Val Pro Gln Glu Met Glu Gly Arg  
435 440 445

Pro Val Leu Ser Gly Glu Ala Ala Glu Ala Val His Ser Gly Thr Ser  
450 455 460

Val Lys Ser Ser Ser Gly Pro Phe Pro Pro Ala Pro Glu Gly Leu Thr  
465 470 475 480

Ala Pro Glu Ile Glu Pro Glu Gly Glu Ser Thr Ala Glu Gly Leu Met  
485 490 495

Lys Pro Ala Met Ala Thr Ser Glu Arg Gly Gln Pro Pro Pro Cys Ser  
500 505 510

Asn Met Trp Thr Leu Tyr Cys Leu Thr Asp Lys Asn Gln Gln Gly His  
515 520 525

Pro Ser Pro Pro Pro Ala Pro Gly Pro Phe Pro Gln Ala Thr Leu Tyr  
530 535 540

Leu Pro Asn Pro Lys Asp Pro Gln Phe Gln Gln His Pro Pro Lys Val  
545 550 555 560

Herr-Paint Seq. Listing.U.S.ST25.txt

Thr Phe Pro Thr Tyr Val Met Gly Asp Thr Lys Lys Thr Ser Ala Pro  
565 570 575

Pro Phe Ile Leu Val Gly Ser Asn Val Gln Glu Ala Gln Gly Trp Lys  
580 585 590

Pro Leu Pro Gly His Ala Val Val Ser Gln Ser Asp Val Leu Arg Tyr  
595 600 605

Val Ala Met Gln Val Pro Ile Ala Val Pro Ala Asp Glu Lys Tyr Gln  
610 615 620

Lys His Thr Leu Ser Pro Gln Asn Ala Asn Pro Pro Ser Gly Gln Asp  
625 630 635 640

Val Pro Arg Pro Lys Ser Pro Val Phe Leu Ser Val Ala Phe Pro Val  
645 650 655

Glu Asp Val Ala Lys Lys Ser Ser Asp Ser Gly Asp Lys Cys Ala Pro  
660 665 670

Phe Gly Ser Tyr Gly Ile Ala Gly Glu Val Thr Val Thr Thr Ala His  
675 680 685

Lys Arg Arg Lys Ala Glu Thr Glu Asn  
690 695

<210> 3  
<211> 350  
<212> PRT  
<213> Homo sapiens

<400> 3

Met Lys Pro Leu Val Leu Leu Val Ala Leu Leu Leu Trp Pro Ser Ser  
1 5 10 15

Val Pro Ala Tyr Pro Ser Ile Thr Val Thr Pro Asp Glu Glu Gln Asn  
20 25 30

Leu Asn His Tyr Ile Gln Val Leu Glu Asn Leu Val Arg Ser Val Pro  
35 40 45

Ser Gly Glu Pro Gly Arg Glu Lys Lys Ser Asn Ser Pro Lys His Val  
50 55 60

Tyr Ser Ile Ala Ser Lys Gly Ser Lys Phe Lys Glu Leu Val Thr His  
65 70 75 80

Herr-Paint Seq. Listing.U.S.ST25.txt

Gly Asp Ala Ser Thr Glu Asn Asp Val Leu Thr Asn Pro Ile Ser Glu  
85 90 95

Glu Thr Thr Thr Phe Pro Thr Gly Gly Phe Thr Pro Glu Ile Gly Lys  
100 105 110

Lys Lys His Thr Glu Ser Thr Pro Phe Trp Ser Ile Lys Pro Asn Asn  
115 120 125

Val Ser Ile Val Leu His Ala Glu Glu Pro Tyr Ile Glu Asn Glu Glu  
130 135 140

Pro Glu Pro Glu Pro Glu Pro Ala Ala Lys Gln Thr Glu Ala Pro Arg  
145 150 155 160

Met Leu Pro Val Val Thr Glu Ser Ser Thr Ser Pro Tyr Val Thr Ser  
165 170 175

Tyr Lys Ser Pro Val Thr Thr Leu Asp Lys Ser Thr Gly Ile Glu Ile  
180 185 190

Tyr Thr Glu Ser Glu Asp Val Pro Gln Leu Ser Gly Glu Thr Ala Ile  
195 200 205

Glu Lys Pro Glu Glu Phe Gly Lys His Pro Glu Ser Trp Asn Asn Asp  
210 215 220

Asp Ile Leu Lys Lys Ile Leu Asp Ile Asn Ser Gln Val Gln Gln Ala  
225 230 235 240

Leu Leu Ser Asp Thr Ser Asn Pro Ala Tyr Arg Glu Asp Ile Glu Ala  
245 250 255

Ser Lys Asp His Leu Lys Pro Ser Leu Ala Leu Ala Ala Ala Ala Glu  
260 265 270

His Lys Leu Lys Thr Met Tyr Lys Ser Gln Leu Leu Pro Val Gly Arg  
275 280 285

Thr Ser Asn Lys Ile Asp Asp Ile Val Thr Val Ile Asn Met Leu Cys  
290 295 300

Asn Ser Arg Ser Lys Leu Tyr Glu Tyr Leu Asp Ile Lys Cys Val Pro  
305 310 315 320

Pro Glu Met Arg Glu Lys Ala Ala Thr Val Phe Asn Thr Leu Lys Asn  
325 330 335

Herr-Paint Seq. Listing.U.S.ST25.txt

Met Cys Arg Ser Arg Arg Val Thr Ala Leu Leu Lys Val Tyr  
 340 345 350

<210> 4  
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 <212> PRT  
 <213> Homo sapiens

<400> 4

Met Ser Pro Arg Gly Thr Gly Cys Ser Ala Gly Leu Leu Met Thr Val  
 1 5 10 15

Gly Trp Leu Leu Leu Ala Gly Leu Gln Ser Ala Arg Gly Thr Asn Val  
 20 25 30

Thr Ala Ala Val Gln Asp Ala Gly Leu Ala His Glu Gly Glu Gly Glu  
 35 40 45

Glu Glu Thr Glu Asn Asn Asp Ser Glu Thr Ala Glu Asn Tyr Ala Pro  
 50 55 60

Pro Glu Thr Glu Asp Val Ser Asn Arg Asn Val Val Lys Glu Val Glu  
 65 70 75 80

Phe Gly Met Cys Thr Val Thr Cys Gly Ile Gly Val Arg Glu Val Ile  
 85 90 95

Leu Thr Asn Gly Cys Pro Gly Gly Glu Ser Lys Cys Val Val Arg Val  
 100 105 110

Glu Glu Cys Arg Gly Pro Thr Asp Cys Gly Trp Gly Lys Pro Ile Ser  
 115 120 125

Glu Ser Leu Glu Ser Val Arg Leu Ala Cys Ile His Thr Ser Pro Leu  
 130 135 140

Asn Arg Phe Lys Tyr Met Trp Lys Leu Leu Arg Gln Asp Gln Gln Ser  
 145 150 155 160

Ile Ile Leu Val Asn Asp Ser Ala Ile Leu Glu Val Arg Lys Glu Ser  
 165 170 175

His Pro Leu Ala Phe Glu Cys Asp Thr Leu Asp Asn Asn Glu Ile Val  
 180 185 190

Ala Thr Ile Lys Phe Thr Val Tyr Thr Ser Ser Glu Leu Gln Met Arg  
 195 200 205

Herr-Paint Seq. Listing.U.S.ST25.txt

Arg Ser Ser Leu Pro Ala Thr Asp Ala Ala Leu Ile Phe Val Leu Thr  
210 215 220

Ile Gly Val Ile Ile Cys Val Phe Ile Ile Phe Leu Leu Ile Phe Ile  
225 230 235 240

Ile Ile Asn Trp Ala Ala Val Lys Ala Phe Trp Gly Ala Lys Ala Ser  
245 250 255

Thr Pro Glu Val Gln Ser Glu Gln Ser Ser Val Arg Tyr Lys Asp Ser  
260 265 270

Thr Ser Leu Asp Gln Leu Pro Thr Glu Met Pro Gly Glu Asp Asp Ala  
275 280 285

Leu Ser Glu Trp Asn Glu  
290

<210> 5  
<211> 97  
<212> PRT  
<213> Homo sapiens

<400> 5

Met Asp Lys Gln Ser Ser Ala Gly Gly Val Lys Arg Ser Val Pro Cys  
1 5 10 15

Asp Ser Asn Glu Ala Asn Glu Met Met Pro Glu Thr Pro Thr Gly Asp  
20 25 30

Ser Asp Pro Gln Pro Ala Pro Lys Lys Met Lys Thr Ser Glu Ser Ser  
35 40 45

Thr Ile Leu Val Val Arg Tyr Arg Arg Asn Phe Lys Arg Thr Ser Pro  
50 55 60

Glu Glu Leu Leu Asn Asp His Ala Arg Glu Asn Arg Ile Asn Pro Leu  
65 70 75 80

Gln Met Glu Glu Glu Glu Phe Met Glu Ile Met Val Glu Ile Pro Ala  
85 90 95

Lys

<210> 6  
<211> 853



Herr-Paint Seq. Listing.U.S.ST25.txt

<212> PRT

<213> Homo sapiens

<400> 6

Met Ser Glu Lys Val Asp Trp Leu Gln Ser Gln Asn Gly Val Cys Lys  
1 5 10 15

Val Asp Val Tyr Ser Pro Gly Asp Asn Gln Ala Gln Asp Trp Lys Met  
20 25 30

Asp Thr Ser Thr Asp Pro Val Arg Val Leu Ser Trp Leu Arg Arg Asp  
35 40 45

Leu Glu Lys Ser Thr Ala Glu Phe Gln Asp Val Arg Phe Lys Pro Gly  
50 55 60

Glu Ser Phe Gly Gly Glu Thr Ser Asn Ser Gly Asp Pro His Lys Gly  
65 70 75 80

Phe Ser Val Asp Tyr Tyr Asn Thr Thr Thr Lys Gly Thr Pro Glu Arg  
85 90 95

Leu His Phe Glu Met Thr His Lys Glu Ile Pro Cys Gln Gly Pro Arg  
100 105 110

Ala Gln Leu Gly Asn Gly Ser Ser Val Asp Glu Val Ser Phe Tyr Ala  
115 120 125

Asn Arg Leu Thr Asn Leu Val Ile Ala Met Ala Arg Lys Glu Ile Asn  
130 135 140

Glu Lys Ile Asp Gly Ser Glu Asn Lys Cys Val Tyr Gln Ser Leu Tyr  
145 150 155 160

Met Gly Asn Glu Pro Thr Pro Thr Lys Ser Leu Ser Lys Ile Ala Ser  
165 170 175

Glu Leu Val Asn Glu Thr Val Ser Ala Cys Ser Arg Asn Ala Ala Pro  
180 185 190

Asp Lys Ala Pro Gly Ser Gly Asp Arg Val Ser Gly Ser Ser Gln Ser  
195 200 205

Pro Pro Asn Leu Lys Tyr Lys Ser Thr Leu Lys Ile Lys Glu Ser Thr  
210 215 220

Lys Glu Arg Gln Gly Pro Asp Asp Lys Pro Pro Ser Lys Lys Ser Phe  
225 230 235 240

Herr-Paint Seq. Listing.U.S.ST25.txt

Phe Tyr Lys Glu Val Phe Glu Ser Arg Asn Gly Asp Tyr Ala Arg Glu  
245 250 255

Gly Gly Arg Phe Phe Pro Arg Glu Arg Lys Arg Phe Arg Gly Gln Glu  
260 265 270

Arg Pro Asp Asp Phe Thr Ala Ser Val Gly Glu Gly Ile Met Thr Tyr  
275 280 285

Ala Asn Ser Val Val Ser Asp Met Met Val Ser Ile Met Lys Thr Leu  
290 295 300

Lys Ile Gln Val Lys Asp Thr Thr Ile Ala Thr Ile Leu Leu Lys Lys  
305 310 315 320

Val Leu Leu Lys His Ala Lys Glu Val Val Ser Asp Leu Ile Asp Ser  
325 330 335

Phe Leu Arg Asn Leu His Ser Val Thr Gly Thr Leu Met Thr Asp Thr  
340 345 350

Gln Phe Val Ser Ala Val Lys Arg Thr Val Phe Ser His Gly Ser Gln  
355 360 365

Lys Ala Thr Asp Ile Met Asp Ala Met Leu Arg Lys Leu Tyr Asn Val  
370 375 380

Met Phe Ala Lys Lys Val Pro Glu His Val Arg Lys Ala Gln Asp Lys  
385 390 395 400

Ala Val Ser Tyr Ser Leu Ile Ser Met Lys Gly Met Gly Asp Pro Lys  
405 410 415

Asn Arg Asn Val Asn Phe Ala Met Lys Ser Glu Thr Lys Leu Arg Glu  
420 425 430

Lys Met Tyr Ser Glu Pro Lys Ser Glu Glu Glu Thr Cys Ala Lys Thr  
435 440 445

Leu Gly Glu His Ile Ile Lys Glu Gly Leu Thr Leu Trp His Lys Ser  
450 455 460

Gln Gln Asn Glu Cys Lys Ser Leu Gly Phe Gln His Ala Ala Phe Glu  
465 470 475 480

Ala Pro Asn Thr Gln Arg Lys Pro Ala Ser Asp Ile Ser Phe Glu Tyr

Pro Glu Asp Thr Gly Asn Leu Ser Leu Pro Pro Tyr Pro Pro Glu Lys  
500 505 510

Pro Glu Asn Phe Met Tyr Asp Ser Asp Ser Trp Ala Lys Asp Leu Ile  
515 520 525

Val Ser Ala Leu Leu Leu Ile Gln Tyr His Leu Ala Gln Gly Gly Arg  
530 535 540

Arg Asp Ala Arg Ser Phe Val Glu Ala Ala Gly Thr Thr Asn Phe Pro  
545 550 555 560

Ala Asn Glu Pro Pro Val Ala Pro Asp Glu Ser Cys Leu Lys Ser Ala  
565 570 575

Pro Ile Val Gly Asp Gln Glu Gln Ala Glu Lys Lys Asp Leu Arg Ser  
580 585 590

Val Phe Phe Asn Ser Ile Arg Asn Leu Leu Ser Glu Thr Ile Phe Lys  
595 600 605

Arg Asp Gln Ser Pro Glu Pro Lys Val Pro Glu Gln Pro Val Lys Glu  
610 615 620

Asp Arg Lys Leu Cys Glu Arg Pro Leu Ala Ser Ser Pro Pro Arg Leu  
625 630 635 640

Tyr Glu Asp Asp Glu Thr Pro Gly Ala Leu Ser Gly Leu Thr Lys Met  
645 650 655

Ala Val Ser Gln Ile Asp Gly His Met Ser Gly Gln Met Val Glu His  
660 665 670

Leu Met Asn Ser Val Met Lys Leu Cys Val Ile Ile Ala Lys Ser Cys  
675 680 685

Asp Ala Ser Leu Ala Glu Leu Gly Asp Asp Lys Leu Gly Asp Ala Ser  
690 695 700

Arg Leu Thr Ser Ala Phe Pro Asp Ser Leu Tyr Glu Cys Leu Pro Ala  
705 710 715 720

Lys Gly Thr Gly Ser Ala Glu Ala Val Leu Gln Asn Ala Tyr Gln Ala  
725 730 735

Herr-Paint Seq. Listing.U.S.ST25.txt

Ile His Asn Glu Met Arg Gly Thr Ser Gly Gln Pro Pro Glu Gly Cys  
740 745 750

Ala Ala Pro Thr Val Ile Val Ser Asn His Asn Leu Thr Asp Thr Val  
755 760 765

Gln Asn Lys Gln Leu Gln Ala Val Leu Gln Trp Val Ala Ala Ser Glu  
770 775 780

Leu Asn Val Pro Ile Leu Tyr Phe Ala Gly Asp Asp Glu Gly Ile Gln  
785 790 795 800

Glu Lys Leu Leu Gln Leu Ser Ala Ala Ala Val Asp Lys Gly Cys Ser  
805 810 815

Val Gly Glu Val Leu Gln Ser Val Leu Arg Tyr Glu Lys Glu Arg Gln  
820 825 830

Leu Asn Glu Ala Val Gly Asn Val Thr Pro Leu Gln Leu Leu Asp Trp  
835 840 845

Leu Met Val Asn Leu  
850